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WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE.

and
DEPARTMENT of WATER RESOURCES STATE of WASHINGTON

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, and other Federal, State and Private organizations.

AS OF
MAR. 1, 1969

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85205
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80521
Idaho	P. O. Box 38, Boise, Idaho 83707
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Building, Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 340, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

KENNETH E. GRANT

ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

|||||

Released by

ORLO W. KRAUTER

STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
SPOKANE, WASHINGTON

In Cooperation with

H. MAURICE AHLQUIST

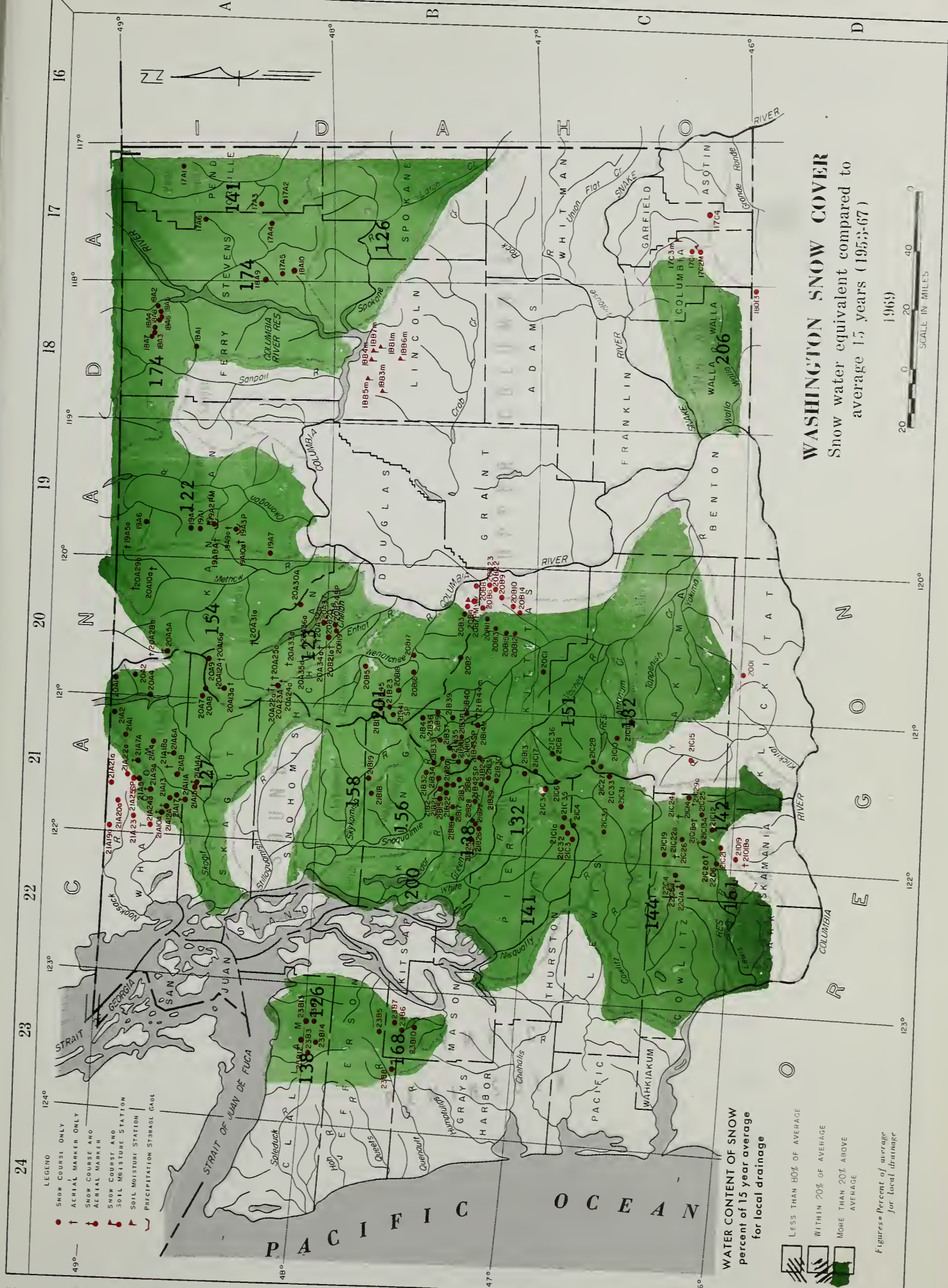
DIRECTOR
DEPARTMENT OF WATER RESOURCES
STATE OF WASHINGTON

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Report prepared by

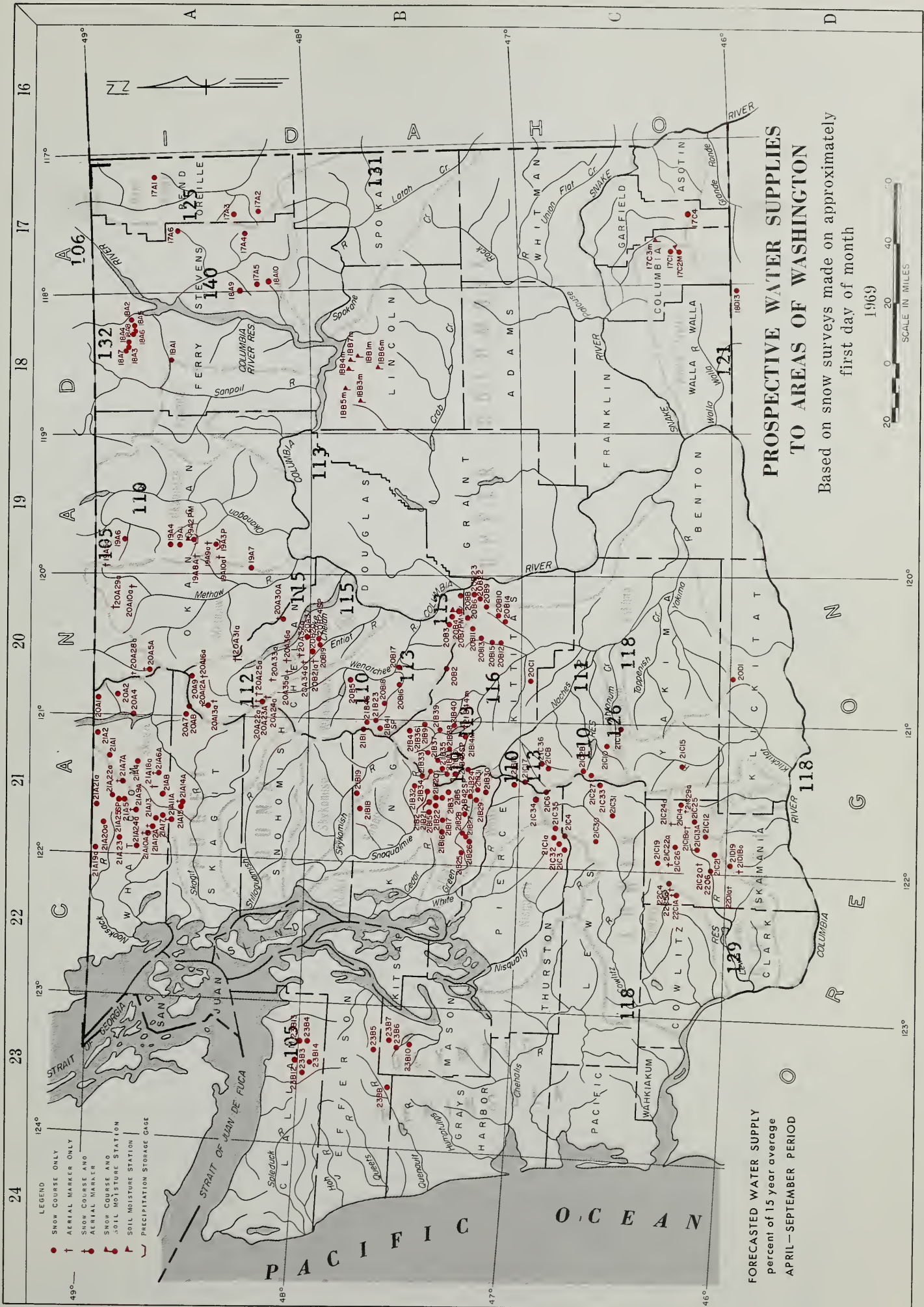
ROBERT T. DAVIS, Snow Survey Supervisor

SOIL CONSERVATION SERVICE
360 U.S. COURTHOUSE
SPOKANE, WASHINGTON 99201



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	30	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A4	5	32N	36E	3170
Coat Creek	18A4	26	39N	33E	3595
Snout Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2750
Summit C. S.	18A7	20	39N	35E	4600
Colville River					
Baird	17A0	10	36N	42E	3215
Chewelah	18A9	34	32N	38E	2885
Civilian	17A1	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4900
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	10	36N	35E	5350
Okanogan River					
Clark	19A5A	2	36N	23E	7000
Muckamuck	19A5A	20	36N	24E	6750
Mutton Creek No. 1	19A1	30	37N	24E	5700
Mutton Creek No. 2	19A4	10	37N	24E	6000
Pasayten	20A28A	32	40N	13E	4300
Rusty Creek	19A3P	18	35N	24E	4500
Salmon Meadows	19A2PM	33	37N	24E	4500
Starvation Mtn.	19A10A	15	35N	23E	6750
Toutle Coulee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10A	10	38N	20E	6400
Dollar Watch	20A29A	8	39N	20E	7000
Harris Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5A	15	40N	23E	7000
Loup Loup	19A7	36	34N	23E	4650
Chelan Lake Basin					
Cloudy Pass	20A22A	12	31N	15E	6500
Greenwood Flat	20A25A	3	31N	16E	3540
Little Meadows	20A24A	8	31N	16E	5275
Lyman Lake	20A23A	18	31N	16E	5900
Park Creek Flat	20A13A	18	34N	16E	2220
Park Creek Ridge	20A12A	7	34N	16E	4600
Petersons	20A16A	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30A	32	31N	20E	6300
War Creek Pass	20A31A	34	33N	18E	6500
Entiat River					
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33A	28	31N	17E	4800
Entiat River Trail	20A34A	2	29N	17E	3150
Fox Camp	20A36A	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	4300
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	4300
Pugh Ridge	20A32A	34	30N	18E	6400
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35A	21	30N	17E	3850
Tommy Creek	20B21A	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	2925
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240
Blevett Pass No. 2	20B2	35	22N	17E	4270
Chiwaukum G. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Neritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
Lewis River (continued)					
Divide Meadow	21C29A	21	9N	10E	5600
Grand Meadow	21C25	28	8N	9E	3500
Lone Pine Shelter	21C26	8	9N	7E	3000
Marble Mountain	22C5A	24	8N	5E	3200
New Huddy River	22C6	36	8N	6E	2000
Oldman Pass	21D19	22	6N	7E	3100
Plains of Abraham	22C1A	35	9N	5E	4400
Smith Creek Road	22C4	20	9N	6E	2100
Spencer Meadow	21C20A	16	8N	7E	3400
Surprise Lakes	21C13A	14	7N	8E	4750
Table Mountain	21C24A	20	9N	9E	4200
Timbered Peak	21D18A	36	6N	6E	3000
Cowlitz River					
Cayuse Pass	21C6	15	16N	10E	5700
Coyote Meadows	21C19	33	10N	7E	4100
Ohanapecosh	21C32	28	15N	10E	2200
Packwood Lake	21C31	11	13N	10E	2870
Pigtail Peak	21C33	11	13N	11E	5900
Potato Hill	21C14	36	10N	10E	4500
Williams Creek	21C30	3	13N	8E	3250
Nisqually River					
Chost Forest	21C4	23	15N	8E	4550
Longmire	21C3	29	15N	8E	2760
Paradise Park (New)	21C35	13	15N	8E	5050
Stem Glade	21C1	13	15N	8E	5050
White River					
Corral Pass	21B13	30	18N	11E	6000
White River Campground	21C34	4	16N	9E	6000
Green River					
Airstrip	21B24	18	20N	11E	1900
Charley Creek	21B25	27	21N	8E	1200
Cougar Mountain	21B42SP	21	21N	9E	3200
Grass Mountain No. 1	21B26	21	20N	8E	4000
Grass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Sawmill Ridge	21B31	5	19N	11E	4700
Snowshoe Butte	21B43SP	14	20N	11E	5700
Stampede Pass	21B10	25	21N	11E	3000
Twin Camp	21B30	18	17N	11E	4100
Cedar River					
City Cabin	21B3	10	21N	10E	2390
Mt. Cardner	21B21	30	22N	10E	3500
Mt. Cardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsay	21B16	8	22N	9E	3000
Mt. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Tinkham Creek	21B20	1	21N	10E	3400
Snoqualmie River					
Bandera Air Strip	21B32	16	22N	10E	1635
Clallie Meadows	21B2	19	22N	11E	3625
South Fork Tolt	21B18	26	26N	9E	1900
Skykomish River					
Lake Elizabeth	21B19	33	26N	10E	2900
Lower Columbia Drainage					
Asotin Creek					
Spruce Springs	17C4	9	8N	42E	5700
Mill Creek					
Couse	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Halmers St)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	36E	2400
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000
White Salmon River					
Cultus Creek	21C12	35	7N	8E	4000
Lewis River					
Blue Lake	21C22A	19	9N	8E	4800
Bob's Trail	21C21	25	8N	7E	2200
Calamity Ridge	22D1A	8	5N	5E	2500
Council Pass	21C18A	24	9N	9E	4200
Skagit River					
Beaver Creek Trail	21A4	35	39N	12E	2200
Beaver Pass	21A1	9	39N	12E	3620
Devils Park	20A4	34	38N	11E	5900
Freezeout Creek Trail	20A1	14	40N	14E	5900
Freezeout Meadows	20A2	14	40N	14E	5900
Lake Hozomeen	21A2	14	40N	14E	2600
Meadows Cabins	20A8	29	34N	14E	1900
Thunder Basin	20A7	15	35N	14E	4200
Baker River					
Dock Butte	21A11A	8	36N	13E	3900
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A4A	14	39N	11E	5400
Kono Kulshan	21A7	31	37N	11E	8100
Mountain Lake	21A4A	23	39N	13E	3600
Mount Blum	21A18A	27	39N	10E	5800
Rocky Creek	21A12A	20	37N	11E	2100
Schreibers Meadow	21A10A	18	37N	11E	3400
S. F. Thunder Creek	21A14A	22	37N	11E	2200
Sulphur Creek	21A13	22	37N	11E	1600
Three Mile Creek	21A15	18	36N	13E	1600
Watson Lakes	21A1	25	37N	9E	4500
Nooksack River					
Bald Mountain	21A19A	7	40N	17E	4400
Canyon	21A20A	20	41N	19E	5100
Glacier Creek	21A23	9-10	34N	17E	3700
Hammegan Pass	21A22A	8	39N	16E	5000
Mazama Park	21A24A	2	37N	17E	4500
Panorama	21A5	17	39N	16E	4300
Panorama Snow Pillow	21A25SP	11	39N	16E	4300
Twin Lakes	21A21A	16	41N	9E	5200
OLYMPIC PENINSULA					
Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Morse Creek					
Cox Valley	23B14	24	29N	6W	4850
Deer Park C. S.	23B13	1	28N	5W	5425
Morse Creek	23B12	25	29N	6W	5425
Elwha River					
Hurricane	23B3	36	29N	1W	4500
Skokomish River					
Black and White	23B7	17	24N	5W	4200
Black and White Lakes	23B6	16	24N	5W	4700
Four Stream	23B10	1	23N	6W	3900
Home Sweet Home	23B5	26	25N	5W	5200
Sundown Pass	23B8	25	24N	7W	3900
LEGEND					
NUMBERING SYSTEM EXAMPLE					
21A7	SNOW COURSE ONLY				
21A7A	AERIAL MARKER ONLY				
21A7A	SNOW COURSE AND AERIAL MARKER				
21A7M	SNOW COURSE AND SOIL MOISTURE STATION				
21A7M	SOIL MOISTURE STATION				
21A7P	SNOW COURSE AND PRECIPITATION STORAGE GAGE				
21A7P	PRECIPITATION STORAGE GAGE				
21A7SP	SNOW PILLOW				



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2972
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	37N	35E	4070
Cabin Creek	18A8	5	38N	30E	3170
Goat Creek	18A4	26	37N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Colville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chewelah	17A1	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4970
Togo	18A10	6	29N	38E	3370
Sanpoil River					
Sherman Creek Pass	18A1	10	36N	35E	5350
Okanogan River					
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Nutton Creek No. 1	19A1	30	37N	24E	5700
Nutton Creek No. 2	19A2	19	37N	24E	6000
Paysafyen	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	20A28F	33	37N	24E	4500
Starrvation Mtn.	19A10a	15	35N	23E	2845
Touta Coulee	19A6	30	39N	25E	
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loup	19A7	36	34N	23E	4650
Chelon Lake Basin					
Cloudy Pass	20A22e	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lyman Lake Flat	20A23a	18	31N	16E	5900
Park Creek Flat	20A13a	18	34N	16E	2200
Park Creek Ridge	20A12a	7	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Entiat River					
Brief	20B19	34	26N	19E	1400
Entiat Meadows	20A33a	28	31N	17E	4800
Entiat River Trail	20A34a	2	29N	17E	3150
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	4300
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	4300
Pugh Ridge	20A32a	34	30N	18E	6400
Shady Pass	20A37	20	29N	19E	6200
Snow Brushy	20A35a	21	30N	17E	3850
Tommy Creek	20B21a	10	28N	18E	5300
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	2925
Berne-Mill Creek (New)	21B18P	13	26N	14E	3240
Blevett Pass No. 2	20B2	35	22N	17E	4270
Chivaukum G. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	42E	5700
Mill Creek					
House	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmers SM)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	38E	2400
Klickitat River					
Status Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000
White Salmon River					
Cultus Creek	21C12	35	7N	8E	4000
Lewis River					
Blue Lake	21C22a	19	9N	8E	4800
Bob's Trail	21C21	25	5N	7E	2200
Calamity Ridge	22D1a	5	5N	5E	2500
Council Pass	21C18a	24	9N	9E	4200
Snoqualmie River					
Pandera Air Strip	21B32	16	22N	10E	1635
Ollalie Meadows	21B2	19	22N	11E	3625
South Fork Tolt	21B18	26	26N	9E	1900
Skykomish River					
Lake Elizabeth	21B19	33	26N	10E	2900
PUGET SOUND DRAINAGE					
Nisqually River					
Ghost Forest	21C4	23	15N	8E	4550
Longlake	21C3	29	15N	8E	2760
Paradise Park (New)	21C35	13	15N	8E	
Stem Glade	21C1	13	15N	8E	5050
White River					
Corral Pass	21B13	30	18N	11E	6000
White River Campground	21C34	4	16N	9E	
Green River					
Airstrip	21B24	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Cougar Mountain	21B42SP	21	21N	9E	3200
Grass Mountain No. 1	21B26	21	20N	8E	4000
Grass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Sawmill Ridge	21B31	5	19N	11E	4700
Snowshoe Butte	21B43SP	14	20N	11E	5000
Stampede Pass	21B10	25	21N	11E	3000
Twin Camp	21B30	12	19N	11E	4100
Cedar River					
City Cabin	21B3	10	21N	10E	2390
Mt. Gardner	21B21	30	22N	10E	3500
Mt. Gardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsay	21B16	31	22N	9E	2500
Mt. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Tinkham Creek	21B20	1	21N	10E	3400
Lewis River (continued)					
Divide Meadow	21C27a	21	9N	10E	5600
Grand Meadow	21C25	28	8N	9E	3500
Lone Pine Shelter	21C26	8	9N	7E	3800
Marble Mountain	22C5a	24	8N	5E	3200
New Nuddy River	22C6	36	8N	6E	2000
Oldman Pass	21D19	22	6N	7E	3100
Plains of Abraham	22C1n	35	9N	5E	4400
Smith Creek Road	22C4	29	9N	6E	2100
Spencer Meadow	21C20a	16	8N	7E	3400
Surprise Lakes	21C13a	14	7N	8E	4250
Table Mountain	21C24a	20	9N	9E	4200
Timbered Peak	21D18a	36	6N	6E	3000
Cowlitz River					
Cayuse Pass	21C6	15	16N	10E	5300
Mosquito Meadows	21C19	33	10N	7E	4100
Okanagoshah	21C31	28	15N	10E	2200
Pachwood Lake	21C31	21	13N	10E	2870
Pigtail Peak	21C33	11	13N	11E	5900
Potato Hill	21C14	36	10N	10E	4500
William Creek	21C30	3	13N	8E	3250
Skagit River					
Beaver Creek Trail	21A1	35	37N	12E	2200
Beaver Pass	21A1	9	37N	12E	3480
Devils Park	20A4	34	37N	16E	5900
Freezeout Creek Trail	20A1	14	40N	14E	3500
Freezeout Meadows	20A2	8	40N	16E	5000
Lake Hazen	21A2	17	40N	14E	2600
Mendocino Cabins	20A8	29	36N	14E	1900
Thunder Basin	20A7	15	35N	14E	4200
Baker River					
Dock Butte	21A11a	8	36N	8E	3900
Easy Pass	21A7a	19	37N	11E	5200
Jasper Pass	21A6a	17	37N	11E	5400
Komo Kulshan	21A17	31	37N	9E	800
Marion Lake	21A7a	23	37N	4E	3600
Mount Blum	21A18a	27	33N	10E	5800
Rocky Creek	21A12a	20	37N	8E	2100
Schreibers Meadow	21A10a	18	37N	8E	3600
S. F. Thunder Creek	21A14a	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lakes	21A6	25	37N	9E	4500
Nooksack River					
Bald Mountain	21A19a	7	40N	7E	4400
Canyon Creek	21A20a	20	40N	8E	5100
Hannegrn Pass	21A23	9-10	34N	7E	3700
Mazama Park	21A22a	8	39N	9E	5000
Phonorama	21A24a	2	37N	7E	4500
Phonorama Snow Pillow	21A5	17	30N	9E	4300
Twin Lakes	21A25SP	17	34N	9E	4300
	21A21a	16	40N	9E	5200
OLYMPIC PENINSULA					
Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Morse Creek					
Cox Valley	23B14	29	20N	6W	
Deer Park G. S.	23B13	1	28N	5W	4850
Morse Creek	23B12	25	29N	7W	5425
Elwha River					
Hurricane	23B3	36	29N	7W	4500
Skokomish River					
Black and White	23B7	17	24N	5W	4200
Black and White Lakes	23B6	16	24N	5W	4700
Four Stream	23B10	1	23N	6W	3000
Home Sweet Home	23B5	22	25N	5W	5200
Sundown Pass	23B8	25	24N	7W	3900
LEGEND					
NUMBERING SYSTEM EXAMPLE					
21A7	SNOW COURSE ONLY				
21A7A	AERIAL MARKER ONLY				
21A7A	SNOW COURSE AND AERIAL MARKER				
21A7M	SNOW COURSE AND SOIL MOISTURE STATION				
21A7M	SOIL MOISTURE STATION				
21A7P	SNOW COURSE AND PRECIPITATION STORAGE GAGE				
21A7P	PRECIPITATION STORAGE GAGE				
21A7SP	SNOW PILLOW				

WATER SUPPLY OUTLOOK

State of Washington
March 1, 1969

* The water supply outlook for irrigation and power has improved in *
* most respects over that which was reported last month. The snow *
* cover in all areas now varies from a low of 126% of average to a *
* high of 213%. While both of these figures are based only on one *
* snow course in each of the respective watersheds other watersheds *
* using many snow courses in their determination indicate a similar *
* percentage range. As was reported last month the snow cover at *
* the lower elevations still accounts for the high percentage fig- *
* ures reported in our Comparison of Snow Cover. Some of the low *
* elevation courses have as much as 20 inches of water on the ground *
* this month and were bare last year at this time. The situation *
* in the tributary areas has both improved and deteriorated. To *
* the north in British Columbia, the northern parts of the water- *
* shed have normal snowpacks. As you proceed to the south the snow- *
* packs increase, percentagewise, with the higher percentages being *
* in the southeast portion of the Province. Here in Washington, in *
* our Okanogan watershed, the snow cover up to the international *
* boundary is well above normal while that to the north is near *
* normal.

*
* The soil moisture conditions have neither improved nor deterior- *
* ated since last month. There has been very little melting of the *
* snowpack except for a few isolated cases and the soil mantle has *
* neither become wetter nor dried out. The reservoir storage is *
* about the same as last month with one exception: Franklin D. *
* Roosevelt Lake has been pulled down to a near record low similar *
* to that which occurred last summer. There is no question that *
* this reservoir will fill with the spring runoff. The irrigation *
* reservoirs are 54% of capacity whereas the average storage reser- *
* voir is 60% of capacity. Runoff during the month of February was *
* generally below normal due to the lack of precipitation that oc- *
* curred over most of the State as well as the continuing cold *
* weather which has prevented snow melt to any extent.

SNOW COVER

All of the watersheds in Washington are reported to have 20% above normal snow cover as of the first of March. Last month there were two watersheds with less than 20% of normal and both of these have improved markedly. There has been deterioration, percentagewise, in some other watersheds but generally speaking the situation is the same as was reported last month. We have received snow cover reports from the Cedar River watershed this month which were unavailable last month. Percentage figures in this area are remarkable--last year being a poor snow year, especially at lower elevations and this year being an excellent snow year, also, especially at lower elevations.



The percentage of snow cover averaged for the seven snow courses is 1127% of last year. Some snow courses could not be used in this comparison because there was no snow last year. This watershed, as a whole, is 200% of normal, the highest in the Puget Sound area.

RESERVOIRS

Due to the extreme cold weather which occurred early in January the power reservoirs were drawn down considerably below their normal level for production of hydroelectric energy. Runoff has not been sufficient to bring these reservoirs up to their normal levels as yet. Irrigation reservoirs which have no power requirements are all near normal for this time of year. Franklin D. Roosevelt Lake is now at its lowest point since construction for this time of year. This is partially due to the fact that they are holding it low for the construction being done on the third power house. But other power reservoirs are as much as 50% of normal for this time of year. With the expected runoff this spring many of these irrigation reservoirs will have to be dumped in order to keep water in down-stream channels below flood stage and in some instances the runoff is going to occur from the tributaries below these reservoirs which will compound the control of the reservoirs in the lower reaches.

PRECIPITATION

During the month of February only two drainage divisions reported above normal precipitation and some stations within these areas reported as high as 400% of normal rainfall. The northcentral portion of the State had precipitation that averaged out 143% of normal and in northeastern Washington the precipitation was 6% above normal. All other drainage divisions reported less than normal, ranging from 46% of normal for the Yakima, Wenatchee, Chelan area to 65% on the southwest slopes of the Cascades. For the winter season precipitation is still above normal except in the upper Columbia portion in Canada and the northwest slopes of the Cascades. The range, percentagewise, is from 94% for the Upper Columbia to 132% for the northcentral area of the State.

STREAMFLOW

Only the Snake River at Clarkston and the Chehalis River has above normal runoffs during February and the reason for the Snake River being high is the evacuation of irrigation reservoirs in southern Idaho for the spring runoff. The runoff ranges from 36% of normal on the Wind River flowing into the lower Columbia to 9% above normal for the Snake River at Clarkston. Forecasts of streamflow for the forthcoming runoff period are all for flows above normal. These forecasts are tabulated within this report but range from 5% above normal for the Similkameen measured at Nighthawk as well as the Dungeness River near Sequim, to 40% above normal for the Colville River at Kettle Falls.



Watersheds that have most of their water producing areas at higher elevations do not have the runoff potential of those that have a good deal of their area in the lower elevation portions. The runoff is not expected to be as high as that which has occurred in the past. There is a potential for high flows in the mountains. This potential will either grow or diminish according to subsequent weather patterns. If we receive normal and above precipitation and normal and above temperatures during the subsequent months, flooding is inevitable on many of these streams but if the precipitation remains below normal and the temperatures fluctuate with warm days and cool nights this high-water potential will diminish and the runoff will occur in an orderly manner.

STREAMFLOW FORECASTS - MARCH 1969

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

Streamflow figures for 1968 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	1968	1967	1966	15-Yr Average 1953-67
<u>COLUMBIA BASIN</u>							
<u>Columbia River System</u>							
<u>Columbia River</u>							
at Birchbank <u>1/</u>	49100	106	Apr-Sep	46362	51491	45563	46370
	39200	104	Apr-Jul	35034	40874	35808	37485
	29300	108	Apr-Jun	22603	27224	24823	27044
<u>Columbia River</u>							
at Grand Coulee <u>1/</u>	78760	113	Apr-Sep	62649	73451	62404	69452
	67560	115	Apr-Jul	49534	61876	51602	58895
	53080	116	Apr-Jun	35427	45656	38739	45885
<u>Columbia River</u>							
bl Rock Island Dam <u>1/</u>	85860	113	Apr-Sep	69046	80788	67973	76244
	73850	114	Apr-Jul	55130	68577	56575	64779
	5785	115	Apr-Jun	39602	51114	42757	50390
<u>Columbia River</u>							
at The Dalles, Ore. <u>1/</u>	124300	118	Apr-Sep	88503	108237	86923	105176
	107100	119	Apr-Jul	70902	92498	72261	90049
	86890	120	Apr-Jun	53387	70762	56465	72405
<u>Pend Oreille River System</u>							
<u>Pend Oreille River</u>							
bl Box Canyon	20000	125	Apr-Sep	12895	16492	13761	15990
	18300	124	Apr-Jul	11020	15587	12783	14770
	15800	124	Apr-Jun	9391	13362	11059	12745
<u>Kettle River System</u>							
<u>Kettle River</u>							
nr. Laurier	2550	132	Apr-Sep	1856	1923	1380	1918
	2430	133	Apr-Jul	1721	1891	1326	1821
	2250	137	Apr-Jun	1560	1750	1172	1644

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Streamflow Forecasts - March 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre - Feet					
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff		15-Yr. Avg.	
				1968	1967	1966	1953-67

Kettle River System (Cont.)

Colville River							
at Kettle Falls	215	140	Apr-Sep		129	80	153
	200	142	Apr-Jul		123	73	141
	185	141	Apr-Jun		116	67	131

Spokane River System*

Spokane River							
at Post Falls, Ida <u>2/</u>	4100	131	Apr-Sep	1681	2811	2513	3151
	4000	131	Apr-Jul	1577	2752	2456	3055
	3800	130	Apr-Jun	1487	2618	2365	2913

Okanogan River System**

Similkameen River							
nr. Nighthawk	1600	105	Apr-Sep	1377	1678	975	1525
	1500	106	Apr-Jul	1292	1607	912	1419
	1320	110	Apr-Jun	1098	1396	773	1197
Okanogan River							
nr. Tonasket	1910	110	Apr-Sep		1822	1046	1738
	1740	110	Apr-Jul		1740	957	1578
	1490	113	Apr-Jun		1513	804	1318

Methow River System**

Methow River							
nr. Pateros	1210	115	Apr-Sep		1256	661	1054
	1130	115	Apr-Jul		1198	610	981
	970	116	Apr-Jun		1034	515	834

Chelan River System

Chelan River							
at Chelan <u>4/</u>	1460	115	Apr-Sep	1225	1366	987	1266
	1310	117	Apr-Jul	1071	1231	874	1119
	1050	121	Apr-Jun	800	966	686	870

* Forecasts made by Morlan W. Nelson and J. Alden Wilson, Soil Conservation Service, Boise, Idaho.

** These forecasts are based in part upon base flow data especially prepared and furnished for this purpose by the U. S. Geological Survey.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

4/ Observed flow corrected for storage in Lake Chelan.

Streamflow Forecasts - March 1969 (Cont.)

Basin. Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	1968	1967	1966	15-Yr. Avg. 1953-67
<u>Chelan River System (Cont.)</u>							
<u>Stehekin River</u>							
at Stehekin	1010	112	Apr-Sep		1004	746	904
	870	113	Apr-Jul		868	637	772
	690	118	Apr-Jun		674	493	586
<u>Wenatchee River System</u>							
<u>Wenatchee River</u>							
at Plain	1470	110	Apr-Sep		1324	1091	1333
	1340	111	Apr-Jul		1213	999	1204
	1090	114	Apr-Jun		955	816	952
Wenatchee River							
at Peshastin	2050	113	Apr-Sep	1530	1797	1493	1814
	1880	114	Apr-Jul	1349	1662	1379	1651
	1550	118	Apr-Jun	1078	1326	1131	1316
Stemilt Basin							
nr. Wenatchee	134	--	May-Sep		146*	132*	--
<u>Yakima River System</u>							
<u>Yakima River</u>							
nr. Martin <u>5/</u>	172	119	Apr-Sep	97	115	129	145
	161	120	Apr-Jul	79	113	125	134
	140	121	Apr-Jun	73	102	113	116
Yakima River							
at Cle Elum <u>6/</u>	1120	116	Apr-Sep		868	855	968
	1040	118	Apr-Jul		801	789	885
	910	119	Apr-Jun		695	702	762
Yakima River							
nr. Parker <u>7/</u>	2100	118	Apr-Sep		1543	1418	1772
	2080	119	Apr-Jul		1584	1434	1752
	1910	119	Apr-Jun		1480	1336	1608
Kachess River							
nr. Easton <u>8/</u>	150	117	Apr-Sep	74	100	109	128
	143	117	Apr-Jul	65	98	107	122
	129	120	Apr-Jun	61	90	99	107

* Thousands of Miners' Inches.

5/ Observed flow corrected for storage in Lake Keechelus.

6/ Observed flow corrected for storage in Keechelus, Kachess and Cle Elum Lakes and diversion by Kittitas Canal.

7/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation and Sunnyside Canals.

8/ Observed flow corrected for storage in Lake Kachess.

Streamflow Forecasts - March 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast Period	Measured Runoff			15-Yr. Avg. 1953-67
				1968	1967	1966	
<u>Yakima River System (Cont.)</u>							
<u>Cle Elum River</u>							
nr. Roslyn <u>9/</u>	550	113	Apr-Sep	358	431	413	485
	510	115	Apr-Jul	310	405	391	445
	440	118	Apr-Jun	263	347	338	373
<u>Bumping River</u>							
nr. Nile <u>10/</u>	170	113	Apr-Sep	106	145	126	150
	157	114	Apr-Jul	93	136	117	138
	133	117	Apr-Jun	83	114	103	114
<u>American River</u>							
nr. Nile	142	110	Apr-Sep		128	113	129
	132	110	Apr-Jul		119	106	120
	112	113	Apr-Jun		100	90	99
<u>Tieton River</u>							
at Tieton Dam <u>11/</u>	275	110	Apr-Sep	176	241	197	251
	239	111	Apr-Jul	140	210	177	215
	194	113	Apr-Jun	113	169	148	172
<u>Naches River</u>							
nr. Naches <u>12/</u>	1000	111	Apr-Sep		876	769	899
	920	112	Apr-Jul		810	707	819
	800	115	Apr-Jun		694	621	698
<u>Ahtanum Creeks</u>							
nr. Tampicol <u>13/</u>	69	126	Apr-Sep		56	39	49
	57	127	Apr-Jul		52	36	45
	51	128	Apr-Jun		45	32	40
<u>Lower Columbia River System</u>							
<u>Mill Creek</u>							
nr. Walla Walla	35	121	Apr-Sep		23	23	29
	31	124	Apr-Jul		20	20	25
	28	122	Apr-Jun		18	18	23
<u>Lewis River</u>							
at Ariel <u>14/</u>	1750	129	Apr-Sep		1107	1371	1358
	1580	132	Apr-Jul		994	1234	1197
	1400	132	Apr-Jun		889	1081	1059
<u>Cowlitz River</u>							
at Castle Rock <u>15/</u>	3320	118	Apr-Sep		2521	2691	2813
	2950	119	Apr-Jul		2258	2420	2481
	2540	120	Apr-Jun		1934	2056	2119

9/ Observed flow corrected for storage in Lake Cle Elum.10/ Observed flow corrected for storage in Bumping Lake.11/ Observed flow corrected for storage in Rimrock Lake.12/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals and City of Yakima.13/ Observed flow of North and South Forks (combined).14/ Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs.15/ Observed flow corrected for storage in Mayfield Reservoir.

Streamflow Forecasts - March 1969 (Cont.)

Basin, Stream and Station	Forecast Runoff 1969	Seasonal Streamflow in Thousands of Acre-Feet				
		% 15-Yr. Avg.	Fore- cast Period	1968	1967	15-Yr. Avg. 1953-67

OLYMPIC PENINSULA

Dungeness River System

Dungeness River

nr. Sequim	180	105	Apr-Sep	204	173	172
	150	106	Apr-Jul	169	142	141
	115	110	Apr-Jun	124	105	105

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about March 1, 1969, as per cent of the same date in 1968 and 1967 and average of record.

Tributary Basin	No. of Courses Average	Years of Record	1969 Snow Water Expressed as per cent of		
			1968	1967	1953-67

UPPER COLUMBIA BASIN

Pend Oreille	7 - 13	5 - 32	164	144	141
Kettle	11 - 15	6 - 31	162	194	174
Colville	5	11	479	452	174
Spokane	3 - 9	5 - 32	183	134	126
Okanogan	25 - 30	4 - 34	137	107	122
Methow	6	8 - 26	154	145	154
Chelan	6 - 8	5 - 19	121	109	123
Entiat	1 - 8	4 - 9	127	189	213
Wenatchee	8 - 10	8 - 24	305	181	201
Yakima	13 - 14	8 - 49	237	222	151
Ahtanum	1 - 2	22 - 24	166	109	182

LOWER COLUMBIA

Mill Creek	2	14 - 15	-	254	206
Klickitat	1	12	-	313	-
White Salmon	1 - 2	23	234	134	142
Lewis	14 - 15	6 - 24	285	202	161
Cowlitz	9 - 10	5 - 25	368	134	144

PUGET SOUND

Nisqually	3 - 4	4 - 12	242	99	141
White	3	4 - 24	170	112	132
Green	5 - 6	7 - 23	495	154	138
Cedar	4 - 7	10 - 18	1127	281	200
Snoqualmie	2 - 3	9 - 24	364	388	156
Skykomish	2 - 3	10 - 24	301	136	158
Skagit	12 - 13	12 - 22	195	126	127
Nooksack	4	4	292	118	-

OLYMPIC PENINSULA

Skokomish	4 - 5	5 - 10	182	138	168
Elwha	1	15	183	112	138
Dungeness	1	20	158	107	126

RESERVOIR STORAGE - 1000 Acre Feet

BASIN or STREAM	RESERVOIR	USABLE ^{1/} CAPACITY	1969	Measured (March) 1968	1967	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	85.0	339.7	121.0	149.4
Columbia	Franklin D. Roosevelt Lake	5232.0	141.2	2353.4	3193.3	2985.2
Columbia	Banks Lake	761.8	720.3	717.6	761.8	511.7
Okanogan	Conconully Reservoir	13.0	4.7	7.0	3.6	6.1
Okanogan	Salmon Lake	10.5	6.3	9.0	3.2	8.5
Chelan	Lake Chelan	676.1	166.2	437.0	179.3	243.7
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	96.5	152.7	119.2	99.0
Kachess	Kachess Lake	239.0	183.8	234.2	198.3	178.5
Cle Elum	Lake Cle Elum	436.9	262.9	398.0	271.4	266.0
Bumping	Bumping Lake	33.7	2.8	28.0	4.8	11.0
Tieton	Rimrock Lake	198.0	149.2	176.4	111.4	124.1
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1202.9	616.9	1227.6	1021.2	851.6
Skagit	Diablo Reservoir	90.6	87.8	84.2	83.1	85.9
Skagit	Gorge Reservoir	9.8	8.1	8.2	8.4	--

^{1/} Based on Active Storage

* 15-year average 1953-67

SOIL MOISTURE - MARCH

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) : Total : Capacity :	Soil Moisture Content (Inches) as of Mar. 1 1969 1968 1967		
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	6.7	7.0	10.5
Jack Woods	18B3m	2600	48	13.6	7.9	9.9	9.8
Krause	18B4m	2440	48	13.6	8.1	6.6	9.0
Sheffels	18B5m	2360	48	13.6	5.8	9.9	8.2
Sherman	18B7m	2440	48	13.6	6.1	8.1	6.6
Wheatridge	18B6m	2200	48	13.6	7.0	8.2	9.3
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	3.0	2.9	3.2
Trout Creek	3-M	3600	48	7.3	Late Report	4.1	3.4
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	Late Report	5.0	4.9
Lake Cle Elum	21B14M	2200	48	12.8	Late Report	9.2	9.1
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	10.4	7.4	8.8
Helmers	17C2M	4400	48	12.0	10.6	11.4	10.8
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	8.9	13.0	10.5

FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) :	Soil Moisture Content		
				Total :	(Inches) as of Oct. 1		
				Capacity :	1968	1967	1966
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	5.0	4.6	5.0
Jack Woods	18B3m	2600	48	13.6	7.1	5.2	4.3
Krause	18B4m	2440	48	13.6	5.2	4.9	5.1
Sheffels	18B5m	2360	48	13.6	4.9	3.7	3.8
Sherman	18B7m	2440	48	13.6	3.9	3.6	3.7
Wheatridge	18B6m	2200	48	13.6	4.6	4.0	4.1
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	2.7	1.5	3.0
Trout Creek	3-M	3600	48	7.3	4.1	4.0	3.8
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	3.1	4.8	2.4
Lake Cle Elum	21B14M	2200	48	12.8	5.2	9.1	6.4
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	7.4	5.4	5.7
Helmers	17C2M	4400	48	12.0	7.6	6.7	6.7
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	5.5	5.6	5.7

PRECIPITATION ^{1/}

Division Averages and Departures

DRAINAGE DIVISIONS	FALL		WINTER	
	Sept-October	1968 ^{2/}	Nov - Dec	1968 & Jan 1969 ^{2/}
	Average	Departure	Average	Departure
Columbia in Canada	4.82	+ 0.93	10.62	- .47
Pend Oreille - Spokane	7.55	+ 3.67	18.77	+ 3.29
Northeastern Washington	3.86	+ 1.49	11.81	+ 2.36
Southeastern Washington	5.18	+ 2.53	13.38	+ 3.04
Central Washington	4.78	+ 0.34	26.45	+ 2.77
North Central Washington	1.05	- 0.36	7.32	+ 1.78
Northwest Slope Cascades	13.60	+ 1.93	42.03	- 2.48
Southwest Slope Cascades	10.97	+ 3.25	35.55	+ 1.06

Northeastern Washington	- Lower Spokane, Colville, Sanpoil and lower Kettle drainages.
Southeastern Washington	- Touchet, Tucannon and Palouse drainages.
Central Washington	- Yakima, Wenatchee and Chelan drainages.
North Central Washington	- Methow and Okanogan drainages.
Northwest Slope Cascades	- Puget Sound drainages.
Southwest Slope Cascades	- Lower Columbia drainages.

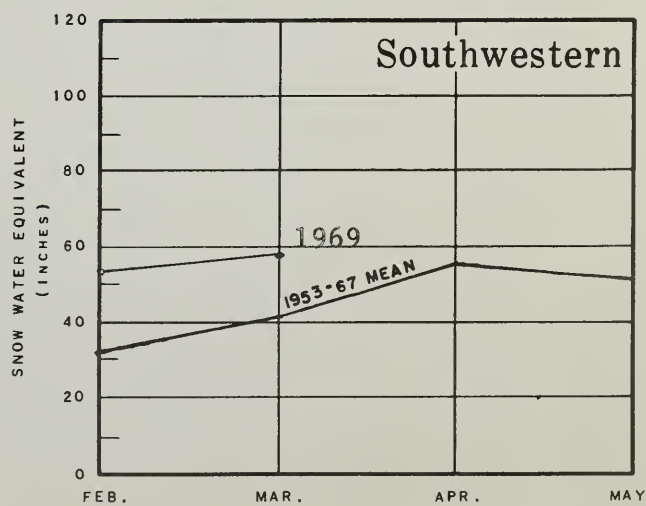
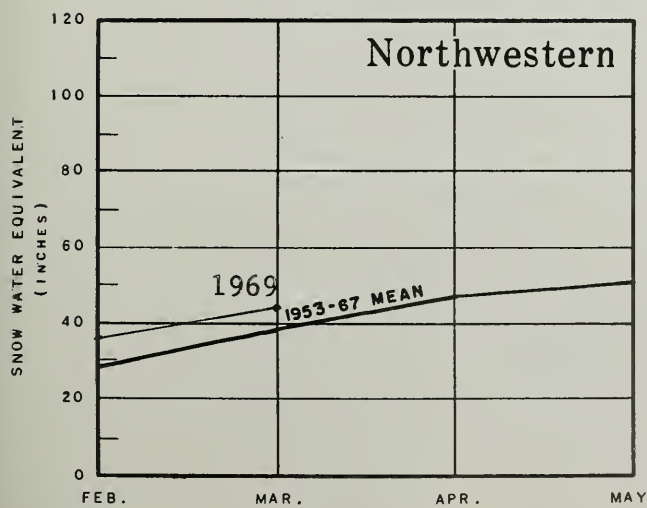
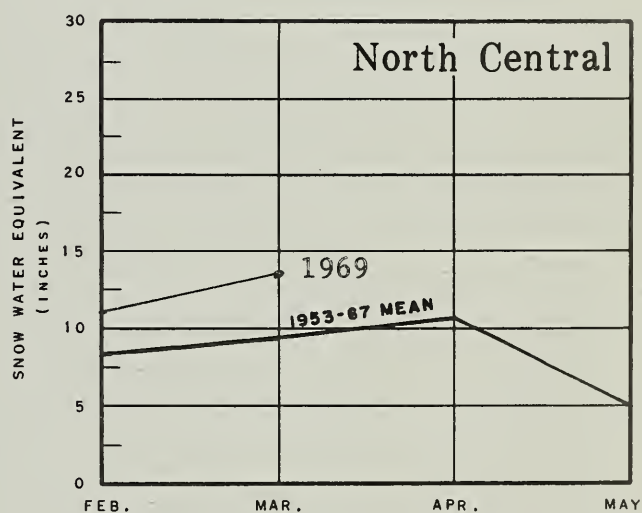
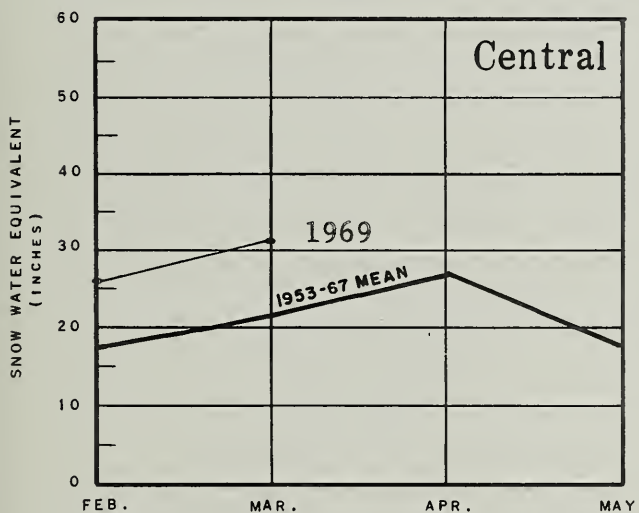
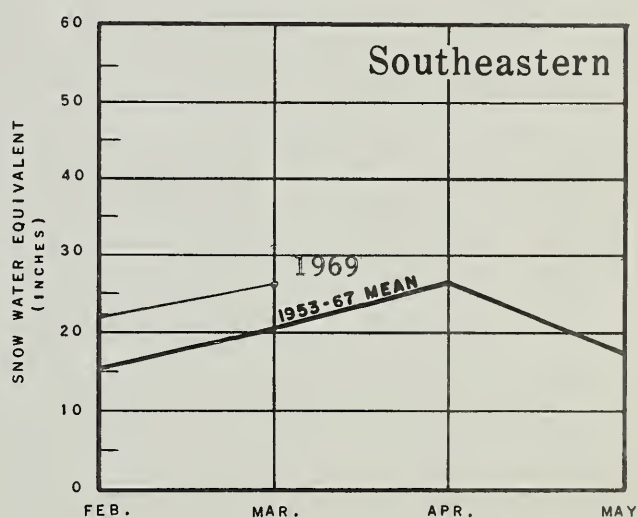
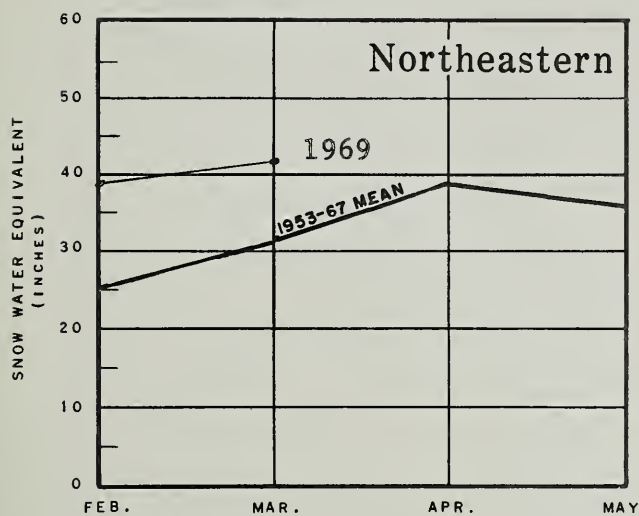
^{1/} - Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Services of Canada and U. S. Weather Bureau.

^{2/} - Departure from

WASHINGTON SNOW COVER

1969

DRAINAGE AREAS

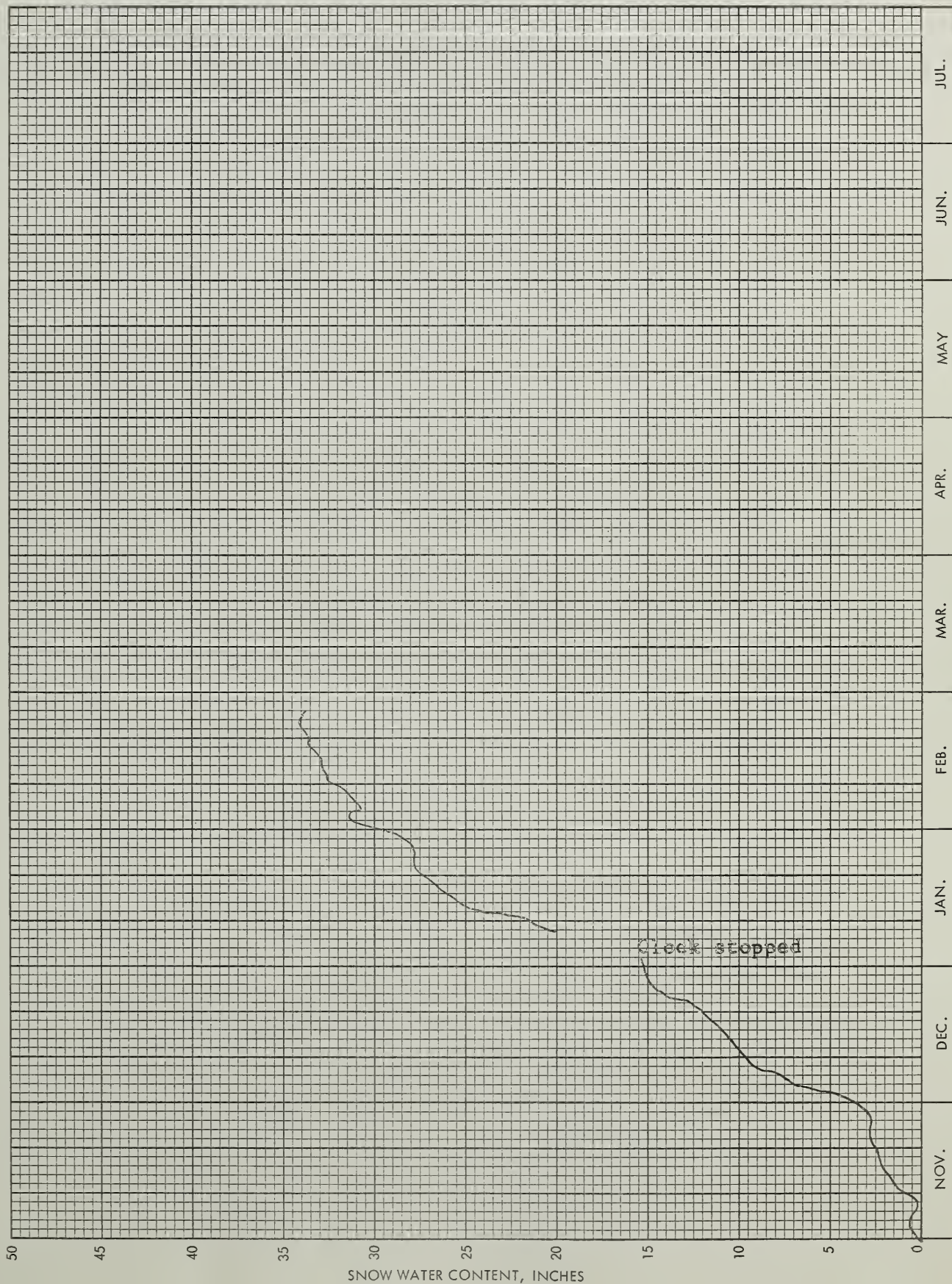


SNOW PILLOW DATA

Berne-Mill Creek

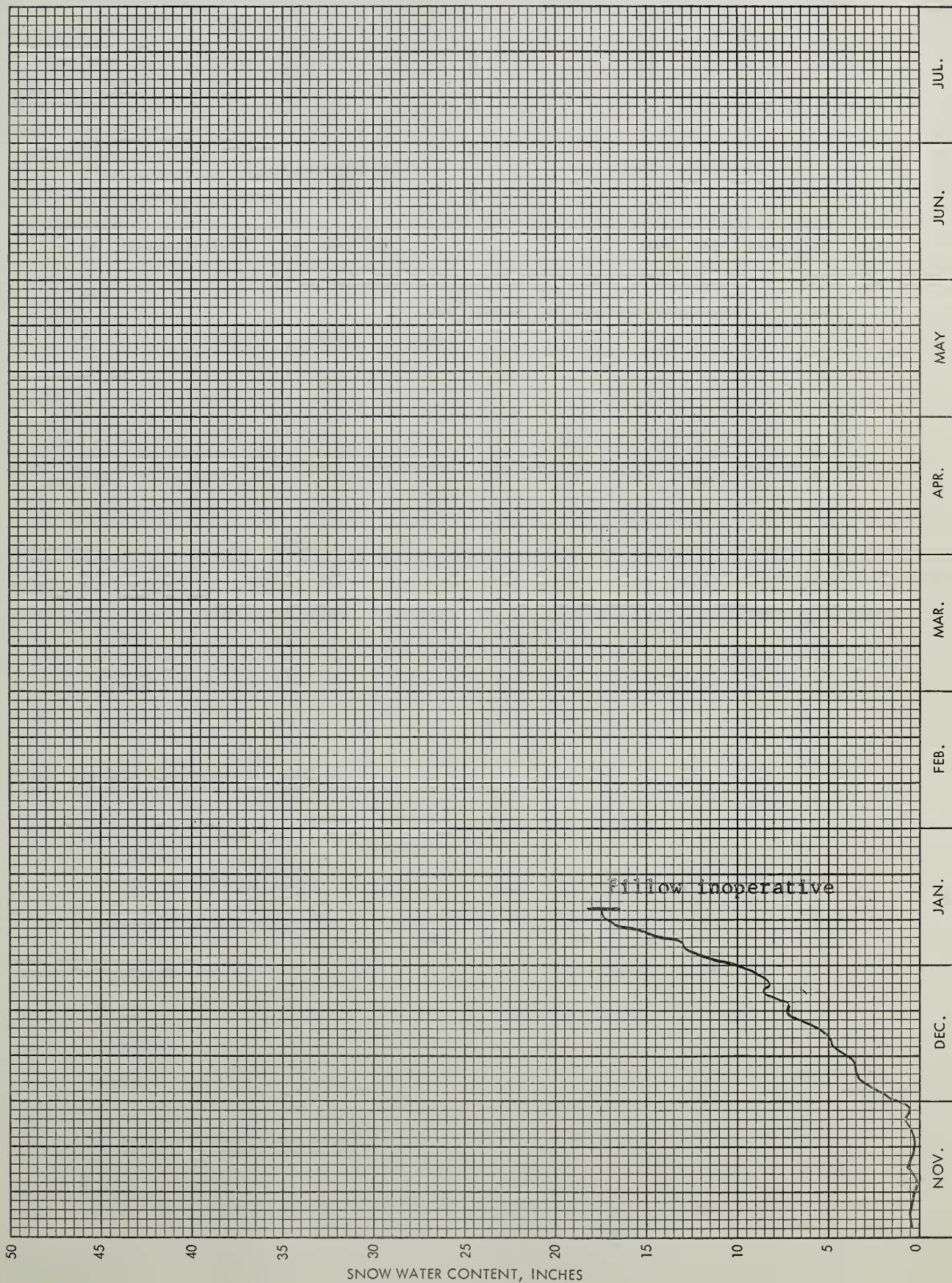
Sec. 13 T. 26N R. 14E No. 21B41SP Drainage: Wenatchee

Lat. 47° 46' Long. 121° 01' Elev. 3170



SNOW PILLOW DATA
Cougar Mountain - FS

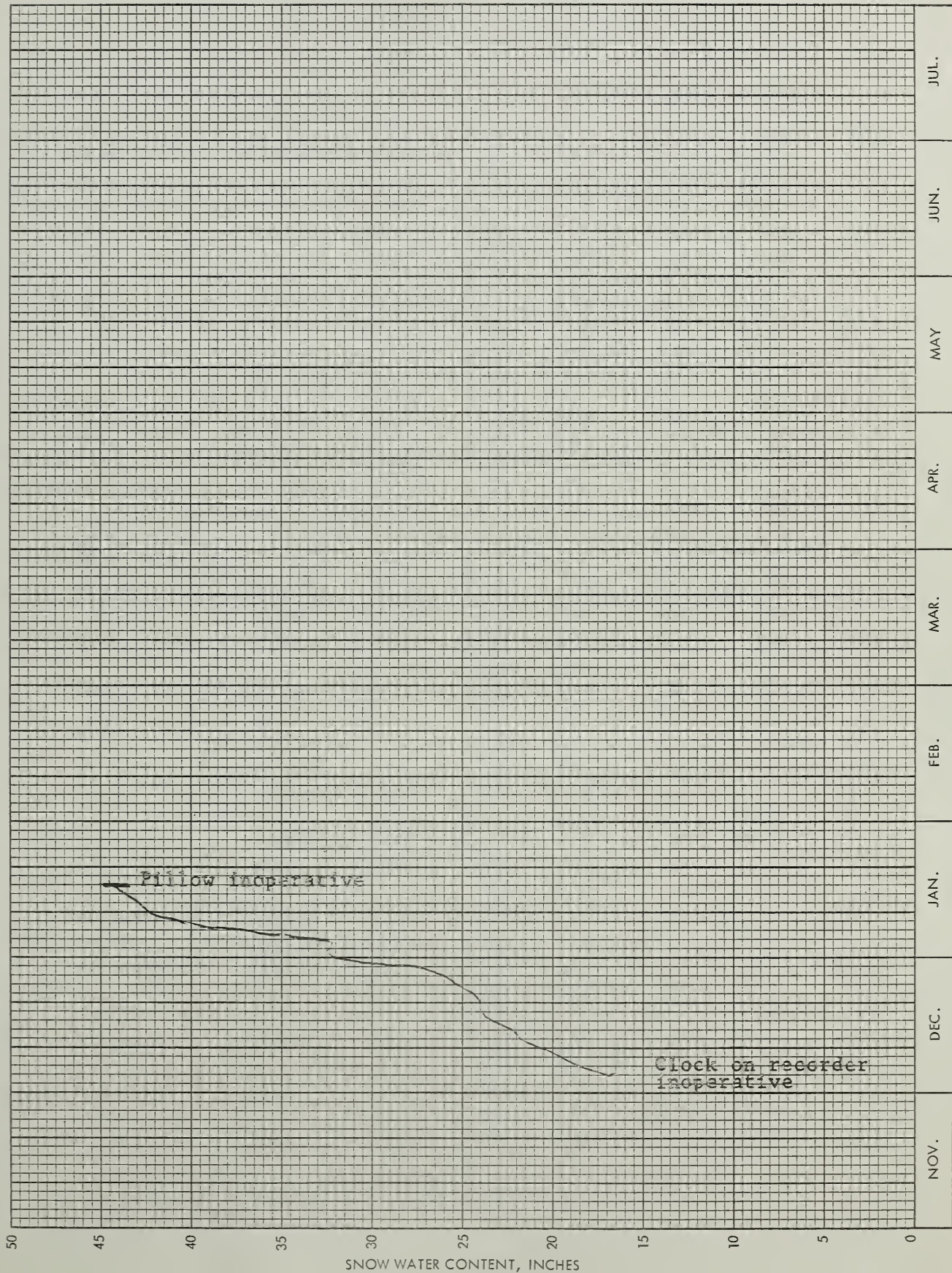
Sec. 28 T. 21N R. 9E No. 21B42SP Drainage: Green River
Lat. 47° 17' Long. 121° 40' Elev. 3200'



SNOW PILLOW DATA

Snowshoe Butte - FS

Sec. 28 T. 21N R. 9E No. 21843SP Drainage: Green River
 Lat. 47° 13' Long. 121° 22' Elev. 5000'



SNOW DATA FEBRUARY 1 to MARCH 1, 1969

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

U P P E R C O L U M B I A D R A I N A G E

PEND OREILLE RIVER

Baree Creek	15B11	5500	2/28	122	48.8	35.7	55.1	--
Baree Midway	15B16	4600	3/3	97	35.9	24.0	44.4	--
Benton Meadow	16A2	2344	2/28	37	12.1	4.7	2.9	5.7
Benton Spring	16A3	4900	2/28	67	23.3	13.0	20.6	18.2
Boyer Mountain	17A2	5250	2/26	94	32.7	21.2	22.8	23.4
Brush Creek	14A4	5000	2/26	49	15.2	7.4	13.4	11.7
#Chewelah	17A4	4925	3/1	66	21.3	14.1	13.2	16.5*
Hoodo Creek	15C1	6200	2/27	129	47.8	36.7	46.1	42.9*
Lookout	15B2	5250	3/2	111	41.3	26.9	35.6	32.3
Mosquito Ridge +	16A4A	5100	2/27	107	39.8	32.2	47.1	--
Nelson	Canada	3050	2/28	62	21.3	12.2	14.6	15.5
Schweitzer Bowl	16A6	4500	2/28	93	33.8	25.5	33.0	--
Schweitzer Ridge	16A5	6100	2/28	146	56.2	37.5	47.8	--
Smith Creek	16A1	4800	Not Measured			--	--	--
Winchester Creek	17A3	2970	2/28	55	18.6	10.2	7.4	--

KETTLE RIVER

Barnes Creek	Canada	5500	2/25	58	16.7	20.8	21.2	17.8**
Big White Mountain	Canada	5500	2/27	64	20.8	16.8	22.0	--
Boulder Road	18A2	1450	2/10	38	9.4	5.5	2.4	4.3*
			2/24	36	9.9	5.6	2.5	3.5*
Butte Creek	18A3	4070	2/10	51	13.1	8.1	8.9	8.1*
			2/24	53	14.6	7.8	7.6	8.7*
Cabin Creek	18A8	3170	2/10	48	12.0	6.5	7.5	7.5*
			2/24	48	12.5	7.9	6.5	7.7*
Carmi	Canada	4100	2/1	32	5.7	--	6.7	--
			3/1	35	8.8	4.9	5.9	5.6**
Farron	Canada	4000	2/27	64	20.9	10.3	13.1	12.5
Goat Creek	18A4	3595	2/10	44	10.9	5.9	6.4	6.9*
			2/24	43	11.8	6.2	5.4	6.6*
Lower Trapping Cr.	Canada	3050	2/27	28	7.2	3.4	5.2	--
#Monashee Pass	Canada	4500	2/25	40	10.7	14.3	14.2	--
Old Glory Mountain	Canada	7000	3/1	98	33.1	--	26.6	24.3**
Snow Caps Creek	18A5	2150	2/10	42	9.2	5.2	1.7	4.6*
			2/24	36	10.0	5.8	1.8	4.2*
Snow Caps Trail	18A6	2720	2/10	42	9.6	6.1	4.4	6.1*
			2/24	40	11.1	6.1	3.9	6.1*
Summit G. S.	18A7	4600	2/10	41	9.6	6.6	8.1	8.0*
			2/24	44	12.0	6.7	7.4	8.3*
Upper Trapping Cr	Canada	5500	2/27	40	9.5	6.2	11.2	--

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

APPENDIX 2

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

COLVILLE RIVER

Baird	17A6	3215	3/2	38	10.6	3.8	4.8	7.0*
Carlson	18A9	2885	3/2	34	9.9	0.6	0.8	4.8*
Chewelah	17A4	4925	3/1	66	21.3	14.1	13.2	16.5*
Stranger Mountain	17A5	4990	3/1	64	20.0	11.9	8.0	12.4*
Togo	18A10	3370	3/2	55	16.7	11.2	4.3	9.4*

SPOKANE RIVER

Copper Ridge	16B2	4800	2/27	88	32.2	15.8	23.4	25.9
Fory-nine Meadows	15B3	5000	3/2	97	36.1	20.9	31.0	28.9*
Fourth of July Summit	16B3	3100	2/14	55	14.8	--	--	--
			2/28	52	16.2	0.0	7.6	--
Granite Peak	15B13A	6000	3/2	120	45.0	37.8	48.2	--
Kellogg Peak +	16B5A	5560	2/27	105	39.1	23.0	28.6	--
#Lookout	15B2	5250	3/2	111	41.3	26.9	35.6	32.2
Lost Lake	15B14A	6000	3/1	162	63.7	45.2	62.1	--
Lower Sands Creek	16B1	3400	2/27	68	22.7	11.0	15.2	18.0
Medicine Ridge	15B4A	6150	3/2	122	45.3	39.0	45.8	--
#Mosquito Ridge +	16A4A	5110	2/27	107	39.8	32.2	47.1	--
Outlaw Creek	15B12A	3750	3/1	62	20.1	11.7	14.0	--
Roland Summit +	15B5A	5200	2/27	100	37.2	23.4	31.4	--
Sherwin	16C1	3200	2/27	55	17.8	5.4	12.0	--
Sunset +	15B9A	5600	2/27	109	40.5	34.6	40.2	--

OKANOGAN RIVER

Aberdeen Lake	Canada	4300	3/3	28	6.9	5.8	5.2	6.0**
Blackwall Mountain	Canada	6250	2/28	78	30.2	34.8	37.2	30.9**
Bouleau Creek	Canada	5000	Late Report			11.8	11.5	9.9**
Brookmere	Canada	3200	3/1	34	8.0	7.8	9.6	8.7
Carrs Landing #1	Canada	2250	3/1	18	4.6	0.0	0.0	--
Carrs Landing #2	Canada	3200	3/1	25	6.0	3.0	3.6	--
Clark +	19A8a	7000	3/3	66	19.8	14.0	--	--
Copper Mountain	Canada	4300	2/23	23	5.9	2.2	5.1	5.8**
Enderby	Canada	6250	2/26	108	38.0	33.0	38.2	31.5**
#Freezeout Meadows	20A2	5000	2/24	74	25.4	27.0	29.3	28.2
Hamilton Hill	Canada	4900	2/22	48	14.3	13.2	17.4	13.2**
#Harts Pass	20A5A	6500	2/25	115	42.4	45.3	40.4	38.5
#Horseshoe Basin +	19A5a	7000	3/3	57	20.5	17.3	17.3	11.6*
Isintok Lake	Canada	5510	3/2	28	6.6	6.2	9.2	7.0**
Lost Horse Mountain	Canada	6300	3/4	30	6.6	9.7	10.2	7.7**
#Loup Loup	19A7	4650	2/28	56	16.4	9.1	7.5	8.9*

+ Snow water equivalent estimated from aerial stadia observation

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

APPENDIX 3

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

OKANOGAN RIVER (Cont.)

McCulloch	Canada	4200	2/26	34	7.8	5.1	6.7	6.1
Missezula Mountain	Canada	5100	2/27	32	7.5	7.9	10.1	9.1**
Mission Creek	Canada	6000	2/26	64	21.1	19.4	21.0	16.8**
Monashee Pass	Canada	4500	2/25	40	10.7	14.7	14.2	13.3**
Mount Kobau	Canada	5950	3/1	50	14.3	11.0	13.5	--
Muckamuck +	19A9a	6390	3/3	68	20.4	13.2	--	--
Mutton Creek No. 1	19A1	5700	2/27	66	20.6	11.6	16.5	12.3
Mutton Creek No. 2	19A4	6000	2/27	64	18.9	12.1	17.4	12.7
New Copper Mountain	Canada	4300	2/23	27	7.0	3.6	5.9	5.3**
Nickel Plate Mountain	Canada	6200	2/28	28	6.1	6.0	10.2	6.9
Paysayten +	20A28a	4300	3/3	52	18.7	11.9	22.1	14.2*
Postill Lake	Canada	4500	3/3	33	8.0	7.6	8.0	7.1
#Quartette Lake	Canada	4000	2/21	43	13.1	--	10.7	--
Rusty Creek	19A3	4000	2/25	51	12.2	6.7	6.5	7.0
Salmon Meadows	19A2	4500	2/27	57	13.6	9.9	10.8	9.7
Silver Star Mountain	Canada	6050	2/26	87	32.8	28.8	29.5	22.0**
Starvation Mountain +	19A10a	6750	3/3	78	23.4	14.4	--	--
Summerland Reservoir	Canada	4200	3/1	33	8.7	8.0	11.2	8.3**
Touts Coulee	19A6	2845	2/26	33	7.4	2.6	0.0	3.7*
Trout Creek	Canada	4700	2/28	29	7.0	5.6	8.1	6.5
White Rocks Mountain	Canada	6000	2/26	63	20.5	22.8	24.8	17.9**

METHOW RIVER

Billy Goat Pass +	20A10a	6409	3/3	104	37.4	32.0	33.7	25.8*
Dollar Watch +	20A29a	7000	3/3	78	28.1	29.6	24.5	23.7*
Harts Pass	20A5A	6500	2/25	115	42.4	45.3	40.4	38.5
Horseshoe Basin +	19A5a	7000	3/3	57	20.5	17.3	17.3	11.6*
Loup Loup	19A7	4650	2/28	56	16.4	9.1	7.5	8.9*
#Mutton Creek No. 1	19A1	5700	2/27	66	20.6	11.6	16.5	12.3
#Mutton Creek No. 2	19A4	6000	2/27	64	18.9	12.1	17.4	12.7
#Rusty Creek	19A3	4000	2/25	51	12.2	6.7	6.5	7.0
#Salmon Meadows	19A2	4500	2/27	57	13.6	9.9	10.8	9.7
#War Creek Pass +	20A31a	6500	3/3	118	42.5	43.3	41.8	--

CHELAN LAKE BASIN

Cloudy Pass +	20A22a	6500	3/3	123	46.7	40.0	41.8	34.9*
Greenwood Flat +	20A25a	3540	Not Measured			--	--	21.4*
Little Meadows +	20A24a	5275	3/3	140	53.2	33.7	46.2	37.5*
Lyman Lake +	20A23A	5900	3/3	164	62.3	--	58.5	50.3*

+ Snow water equivalent estimated from aerial stadia observations

Not located directly on this drainage

* Adjusted 1953-67 average

** Average for years of record

APPENDIX 4

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

CHELAN LAKE BASIN (Cont.)

Park Creek Flat +	20A13a	2220	Not Measured			29.6	29.9	31.0*
Park Creek Ridge +	20A12a	4600	3/3	137	52.1	37.7	47.6	41.7*
Petersons +	20A16a	3730	3/3	90	34.2	31.1	37.7	32.5*
Rainy Pass	20A9	4780	2/25	107	40.2	37.6	44.4	37.0
Safety Harbor +	20A30a	6300	2/6	88	28.2	--	20.8	--
			3/3	93	35.3	--	24.3	--
War Creek Pass +	20A31a	6500	3/3	118	42.5	43.3	41.8	--

ENTIAT RIVER

Brief	20B19	1600	2/23	44	13.4	6.9	2.1	6.3*
Entiat Meadows +	20A33a	4800	3/3	142	47.4	49.0	48.0	--
Entiat River Trail +	20A34a	3150	3/3	76	25.4	18.8	17.6	--
Fox Camp +	20A36a	6510	3/3	172	57.4	64.5	49.3	--
Pope Ridge	20B20	4300	2/27	77	25.6	13.4	16.0	--
Pope Ridge SP	20B24SP	4300	Not Measured			12.4	--	--
						12.8	--	--
Pugh Ridge +	20A32a	6400	3/3	103	34.4	37.1	26.7	--
Snow Brushy +	20A35a	3850	3/3	117	39.1	40.9	35.5	--
Tommy Creek +	20B21a	5300	3/3	92	30.7	24.8	25.7	--

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	2/14	106	37.2	16.7	23.9	24.0*
			2/27	97	36.8	15.5	23.6	23.9*
Berne-Mill Creek New	21B41SP	3240	2/27	89	33.2	8.9	22.6	--
Blewett Pass No. 2	20B2	4270	2/28	61	22.7	8.5	11.0	13.8
Chiwaukum G. S.	20B16	1810	2/14	60	17.4	8.3	7.3	10.5*
			2/27	54	17.4	8.2	7.4	10.5*
#Fish Lake	21B4	3371	2/24	109	36.8	20.6	29.4	31.7*
Lake Wenatchee	20B5	1970	2/14	67	20.4	10.1	10.2	13.0
			2/27	62	21.0	9.9	11.1	13.4*
Leavenworth R. S.	20B17	1127	2/11	60	13.0	5.0	0.0	4.3*
			2/28	47	13.8	1.7	0.0	2.6*
#Lyman Lake	20A23a	5900	3/3	164	62.3	--	58.5	50.3*
Merritt	20B18	2140	2/14	78	26.0	10.5	9.3	14.6*
			2/27	71	25.8	9.8	9.4	13.7*
Stevens Pass	21B1	4070	2/14	154	55.2	23.8	46.6	40.3
			2/27	144	57.9	24.2	50.3	44.4
Stevens Pass Sand Shed	21B45	3700	2/14	124	45.0	18.2	--	--
			2/27	111	44.2	17.2	--	--

+ Snow water equivalent estimated from aerial stadia observations

Not located directly on this drainage

* Adjusted 1953-67 average

APPENDIX 5

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

COLOCKUM CREEK

Colockum Creek	20B22	5300	2/27	61	21.2	9.6	--	--
Colockum Creek No. 2	20B23	4300	2/27	53	17.5	9.0	--	--

SQUILCHUCK CREEK

Beehive Springs	20B3	4400	2/27	51	16.4	6.2	2.6	6.5*
Scout-A-Vista	20B4	3400	2/27	51	15.5	7.2	2.6	7.0*

STEMILT CREEK

Jump-Off	20B8	4450	2/26	50	15.4	9.2	2.4	6.8*
Stemilt Slide	20B6	5000	2/26	63	20.0	13.1	8.3	12.6
Upper Wheeler	20B7	4400	2/26	56	18.8	9.7	2.6	8.5*

YAKIMA RIVER

#Ahtanum R. S.	21C11	3100	2/24	47	13.2	6.6	0.0	5.9*
Big Boulder Creek	21B9	3200	2/24	78	24.6	6.4	16.9	18.5*
#Blewett Pass No. 2	20B2	4270	2/28	61	22.7	8.5	11.0	13.8
Bumping Lake	21C8	3450	2/14	68	20.8	10.1	11.4	15.1*
			2/28	62	20.6	10.3	12.1	15.3
Bumping Lake New	21C36	3400	2/14	76	24.6	11.9	14.7	--
			2/28	70	24.0	12.8	15.9	--
#Cayuse Pass	21C6	5300	2/25	205	83.5	54.5	77.7	71.6*
Colockum Pass	20B9	5370	Late Report			13.0	11.8	14.9*
Cooke Creek	20B10	4123	3/5	26	6.8	0.0	0.0	5.6*
Corral Pass	21C13	6000	2/27	119	47.0	22.1	39.2	33.2*
Fish Lake	21B4	3371	2/24	109	36.8	20.6	29.4	31.7*
Green Lake	21C10	6000	2/24	100	36.2	27.5	33.2	25.7*
Grouse Camp	20B11	5385	3/4	61	20.7	12.5	11.3	16.1*
High Creek	20B12	2930	3/4	31	9.4	4.3	0.0	5.1*
Joe Lake +	21B46a	4624	2/27	183	70.5	New Aerial Marker		
Lake Cle Elum	21B14M	2200	2/15	56	17.6	--	2.2	--
			2/27	53	18.2	0.0	1.7	8.5
Lemah Creek +	21B47a	3327	2/27	132	50.8	New Aerial Marker		
Manashtash	20C1	3935	Late Report			2.4	0.0	4.0*
Morse Lake	21C17	5400	2/27	160	64.2	44.4	59.2	47.0*
Nanum	21B39	2340	3/4	45	11.5	8.5	5.0	9.8*
#Olallie Meadows	21B2	3625	2/5	132	48.2	19.1	28.1	30.2
			2/25	120	51.6	16.2	38.8	40.4
#Satus Pass	20D1	4030	2/27	57	14.4	0.0	4.6	--
#Stampede Pass	21B10	3000	2/13	200	60.0	18.1	--	--
			3/3	196	67.5	14.9	39.9	43.4*

+ Snow water equivalent estimated from aerial stadia observations

Not located directly on this drainage

* Adjusted 1953-67 average

APPENDIX 6

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

YAKIMA RIVER (Cont.)

Trail Creek	20B14	3360	3/4	19	6.0	0.0	0.0	--
Tunnel Avenue	21B8	2450	2/17	87	29.9	11.3	9.7	20.2*
			2/27	82	30.6	10.7	14.2	21.6
Walters Flat	20B15	3360	3/4	38	11.0	6.4	0.0	6.6*
White Pass (E.Side)	21C28	4500	2/19	84	30.0	9.9	20.2	21.5*
			2/27	85	30.9	9.0	20.9	21.1*
White Pass (L. Lake)	21C27	4500	2/19	97	37.5	10.6	25.5	22.6*
			2/28	100	37.4	11.0	24.9	26.1*

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	2/24	47	13.2	6.6	0.0	5.9*
#Green Lake	21C10	6000	2/24	100	36.2	27.5	33.2	25.7*

LOWER COLUMBIA DRAINAGEASOTIN CREEK

Spruce Springs	17C4	5700	2/28	77	30.2	16.2	18.2	--
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MILL CREEK

Homestead	17C1	4030	2/27	50	17.6	0.0	6.1	7.4*
Martin Springs	17C2	4400	2/27	61	21.6	0.0	9.8	12.5*
Tollgate	18D3M	5070	2/27	72	26.7	5.7	20.2	21.0
Walla Walla Div.	18D13	2400	Not Measured			0.0	0.0	2.8*

Klickitat River

Satus Pass	20D1	4030	2/27	57	14.4	0.0	4.6	--
West Fork Cabin	21C15	3000	Not Measured			7.4	0.6	7.9*

WHITE SALMON RIVER

Cultus Creek	21C12	4000	2/25	146	56.1	--	--	38.9*
#Surprise Lakes	21C13A	4250	2/25	146	59.1	25.3	44.0	42.0

WIND RIVER

#Old Man Pass	21D19	3100	2/26	97	35.3	12.1	16.1	15.8*
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+ Snow water equivalent estimated from aerial stadia observations

Not located directly on this drainage

* Adjusted 1953-67 average

APPENDIX 7

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

LEWIS RIVER

Blue Lake +	21C22a	4800	1/2	147	44.1	24.3	36.4	30.1*
			2/6	214	67.5	53.0	64.0	56.0*
			2/24	220	88.0	50.2	73.0	70.4*
Bob's Trail	21C21	2200	2/26	73	27.5	8.1	16.4	12.4*
Calamity Ridge +	22D1a	2500	2/6	86	24.1	3.2	0.0	--
			3/1	71	26.9	0.0	3.0	--
Council Pass +	21C18a	4200	1/2	77	22.0	9.5	--	18.4*
			2/6	118	39.0	24.4	29.3	27.4*
			2/24	116	46.4	21.1	40.3	34.8*
#Cultus Creek	21C12	4000	2/25	146	56.1	--	--	38.9*
Divide Meadow +	21C29a	5600	1/2	92	28.5	13.7	--	24.7*
			2/24	128	53.8	34.6	49.6	47.7*
Grand Meadow	21C25	3500	2/25	89	31.7	14.4	23.5	22.9*
Lone Pine Shelter	21C26	3800	2/26	124	47.4	27.3	38.8	31.4*
Marble Mountain +	22C5a	3200	1/2	56	16.2	11.2	3.3	--
			2/6	134	41.5	22.1	16.8	--
			2/24	133	55.9	6.2	--	--
#Mosquito Meadows	21C19	4100	2/26	117	44.4	30.7	38.9	34.4*
New Muddy River	22C6	1400	2/26	67	29.6	0.0	0.0	--
Old Man Pass	21D19	3100	2/26	97	35.3	12.1	16.1	15.8*
Plains of Abraham +	22C21a	4400	1/2	125	37.5	17.8	30.1	22.1*
			2/6	184	60.8	42.9	52.5	39.0*
			2/24	208	83.2	41.4	58.5	55.7*
Smith Creek Road	22C4	2100	2/26	95	39.4	15.1	15.5	13.9*
Spencer Meadow +	21C20a	3400	1/2	48	13.5	12.6	4.9	7.8*
			2/6	118	35.4	18.4	17.5	14.3*
			2/24	100	38.0	8.6	24.3	20.5*
Surprise Lakes	21C13A	4250	2/25	146	59.1	25.3	44.0	42.0
Table Mountain +	21C24a	4200	1/2	85	24.6	14.7	18.5	21.1*
			2/6	132	43.6	28.1	34.6	32.1*
			2/24	128	51.2	22.9	44.5	40.6*
Timbered Peak +			2/24	104	39.4	0.0	17.5	16.4*

COWLITZ RIVER

Cayuse Pass	21C6	5300	2/25	205	83.5	54.5	77.7	71.6*
Mosquito Meadows	21C19	4100	2/26	117	44.4	30.7	38.9	34.4*
Ohanapecosh	21C32	2200	2/28	59	21.6	5.1	14.4	14.8*
Packwood Lake	21C31	2870	2/26	56	22.0	1.6	13.2	12.0*
Pigtail Peak	21C33	5900	2/19	162	71.1	36.7	52.4	--
			2/28	162	65.8	39.0	59.8	--

+ Snow water equivalent estimated from aerial stadia observations

Not located directly on this drainage

* Adjusted 1953-67 average



APPENDIX 8

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

COWLITZ RIVER (Cont.)

#Plains of Abraham +	22C1a	4400	1/2	125	37.5	17.8	30.1	22.1*
			2/6	184	60.8	42.9	52.5	39.0*
			2/24	208	83.2	41.4	58.5	55.7*
Potato Hill	21C14	4500	2/26	107	41.9	18.6	28.4	25.7*
#White Pass (E. Side)	21C28	4500	2/19	84	30.0	9.9	20.2	21.5*
			2/27	85	30.9	9.0	20.9	21.1*
#White Pass (L. Lake)	21C27	4500	2/19	97	37.5	10.6	25.5	22.6*
			2/28	100	37.4	11.0	24.9	26.1*
Willame Creek	21C30	3250	2/26	82	31.3	10.3	30.9	27.0*

PUGET SOUND DRAINAGENISQUALLY RIVER

Ghost Forest	21C4	4550	2/27	119	46.2	13.3	47.2	38.8*
Longmire	21C3	2760	2/27	44	16.2	0.0	13.2	8.4*
New Paradise Park	21C35	5500	2/27	146	57.6	31.2	71.2	--
Stem Glade	21C1	5050	2/27	170	66.6	34.0	70.6	59.4*

WHITE RIVER

#Cayuse Pass	21C6	5300	2/25	205	83.5	54.5	77.7	71.6*
Corral Pass	21C13	6000	2/27	119	47.0	22.1	39.2	33.2*
#Morse Lake	21C17	5400	2/27	160	64.2	44.4	59.2	47.0*
White River Campground	21C34	4000	Not Measures			16.5	24.7	--

GREEN RIVER

Airstrip	21B24	1800	2/27	34	13.9	0.0	0.0	--
Charley Creek	21B25	1200	2/28	22	9.0	0.0	0.0	--
Cougar Mountain SP	21B42SP	3200	2/5	82	27.8	4.2	--	--
			Inoperative			0.0	--	--
Grass Mtn. No. 2	21B27	2900	2/28	83	31.2	4.7	14.0	18.1*
Grass Mtn. No. 3	21B28	2100	2/28	50	20.6	0.0	0.0	--
Lester Creek	21B29	3100	2/25	87	32.1	11.4	19.2	20.7*
Sawmill Ridge	21B29	4700	2/25	97	37.8	13.4	37.2	36.5*
Snowshoe Butte SP	21B43SP	5000	2/5	179	65.8	14.6	--	--
			2/25	159	64.0	26.6	--	--
Stampede Pass	21B10	3000	2/13	200	60.0	18.1	--	--
			3/3	196	67.5	14.9	39.9	43.4*
Twin Camp	21B30	4100	2/25	71	26.2	2.5	23.7	24.9*

Not located directly on this drainage

* Adjusted 1953-67 average

+ Snow water equivalent estimated from aerial stadia observations

APPENDIX 9

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1966	1967	1953-67 Avg.

CEDAR RIVER

City Cabin	21B3	2390	2/25	79	29.8	1.8	11.9	14.8*
Mt. Gardner	21B21	3300	2/24	77	32.0	--	--	15.4*
Mt. Lindsay	21B16	2500	2/24	79	29.2	4.2	10.1	12.9*
Mt. Washington	21B15	3000	2/26	48	19.7	0.0	4.5	7.2*
Rex River	21B17	2400	2/24	41	16.2	0.0	7.7	12.1*
S. F. Cedar	21B6	3000	2/25	88	33.6	2.2	16.9	19.2*
Tinkham Creek	21B20	3400	2/25	101	38.6	6.1	12.9	20.6*

SNOQUALMIE RIVER

Alpine Meadow	21B48	3500	2/26	142	57.6	New Course		
#Lake Elizabeth	21B19	2900	2/26	148	61.2	15.0	39.2	33.1*
Olallie Meadows	21B2	3625	2/5	132	48.2	19.1	28.1	30.2
			2/25	120	51.6	16.2	38.8	40.4
S. F. Tolt	21B18	1900	2/26	41	18.4	0.0	2.1	--

SKYKOMISH RIVER

Lake Elizabeth	21B19	2900	2/26	148	61.2	15.0	39.2	33.1*
#Stevens Pass	21B1	4070	2/14	154	55.2	23.8	46.6	40.3
			2/27	144	57.9	24.2	50.3	44.4
#Stevens Pass Sand Shed	21B45	3700	2/14	124	45.0	18.2	--	--
			2/27	111	44.2	17.2	--	--

SKAGIT RIVER

Beaver Creek Trail	21A4	2200	2/24	68	22.8	14.3	14.0	14.0*
Beaver Pass	21A1	3680	2/24	109	40.9	24.4	31.2	29.3*
Cloudy Pass +	20A22a	6500	3/3	123	46.7	40.0	41.8	34.9*
Devils Park	20A4	5900	2/25	99	38.2	42.9	47.8	39.1
Freezeout Cr. Trail	20A1	3500	2/24	46	14.6	8.7	12.6	12.6
Freezeout Meadows	20A2	5000	2/24	74	25.4	27.0	29.3	28.2
#Harts Pass	20A5A	6500	2/25	115	42.4	45.3	40.4	38.5
Klesilkwa	Canada	3700	2/27	45	14.3	5.3	15.6	11.2
Lake Hozomeen	21A2	2600	2/24	44	12.6	8.2	6.1	9.0*
#Lyman Lake +	20A23A	5900	3/3	164	62.3	--	58.5	50.3*
Meadow Cabins	20A8	1900	2/25	34	11.2	2.2	6.0	7.2*
New Tashme	Canada	2500	3/1	40	14.6	4.1	10.1	9.9
Quartette Lake	Canada	4000	2/21	43	13.1	--	10.7	--
#Rainy Pass	20A9	4780	2/25	107	40.2	37.6	44.4	37.0
Thunder Basin	20A7	4200	2/25	73	25.2	14.9	21.8	20.5*

+ Snow water equivalent estimated from aerial stadia observations

* Adjusted 1953-67 average

Not located directly on this drainage

APPENDIX 10

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.
<u>BAKER RIVER</u>								
Dock Butte +	21A11A	3800	2/5	184	63.5	27.7	47.0	46.8*
			2/16	184	73.6	34.8	--	64.4*
			2/27	165	69.3	33.2	74.0	70.4*
Easy Pass +	21A7A	5200	2/5	167	57.6	34.3	64.2	59.0*
			2/16	166	66.4	45.8	--	--
			2/27	160	67.2	57.1	82.0	82.1*
Jasper Pass +	21A6A	5400	2/5	231	79.7	52.6	81.5	68.5*
			2/16	234	93.6	69.5	--	77.3*
			2/27	208	87.4	82.8	100.8	87.3*
Komo Kulshan	21A17	800				--	--	--
Marten Lake +	21A9A	3600	2/5	182	62.8	35.0	65.5	56.4*
			2/16	191	76.4	44.2	--	--
			2/27	188	79.0	46.1	89.2	73.3*
Mount Blum +	21A18a	5800	2/5	138	47.6	28.8	58.8	--
			2/16	129	51.6	34.4	--	--
			2/27	127	53.3	49.2	79.2	--
#Panorama (New)	21A26	4300	2/15	170	68.0	New Course		
			2/25	161	64.7			
Rocky Creek +	21A12A	2100	2/5	118	40.7	15.7	23.2	19.6*
			2/16	99	39.6	4.0	--	26.2*
			2/27	93	39.0	22.2	34.4	23.3*
Schreibers Meadow +	21A10A	3400	2/5	165	56.9	17.5	46.4	42.5*
			2/16	164	65.6	33.6	--	55.9
			2/27	148	65.5	36.3	64.4	58.1*
S. F. Thunder Creek+	21A14A	2200	2/5	56	19.3	2.9	2.4	4.6*
			2/16	54	21.6	2.4	--	--
			2/27	48	20.2	0.0	2.4	4.5*
Watson Lakes +	21A8A	4500	2/5	158	54.5	26.3	46.3	46.0*
			2/27	157	65.9	39.0	70.0	61.3*

NOOKSACK RIVER

Bald Mountain +	21A19a	4400	2/27	137	54.8	26.9	50.4	--
Canyon +	21A20a	5100	2/27	147	58.8	44.7	54.2	--
Glacier Creek	21A23	3700	2/26	76	29.1	5.4	21.2	--
Panorama (New)	21A26	4300	2/15	170	68.0	New Course		
			2/25	161	64.7			
Twin Lakes +	21A21a	5200	2/27	190	76.0	57.2	68.2	--

OLYMPIC PENINSULADUNGENESS RIVER

Deer Park	23B4	5200	2/25	72	26.2	16.6	24.4	20.8
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+ Snow water equivalent estimated from aerial stadia observations

* Adjusted 1953-67 average

APPENDIX 11

SNOW

DRAINAGE BASIN and SNOW COURSE			1969			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1968	1967	1953-67 Avg.

MORSE CREEK

Cox Valley	23B14	4500	2/24	121	46.1	28.8	--	--
Deer Park G. S.	23B13	4850	2/25	51	17.8	9.5	15.3	--

ELWHA RIVER

Hurricane	23B3	4500	2/27	87	30.2	16.5	27.0	21.8*
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SKOKOMISH RIVER

Black & White	23B7	4200	2/24	132	84.0	29.0	42.2	32.3*
Black & White Lakes	23B6	4700	2/24	146	62.6	39.8	59.2	49.4*
Four Streams	23B10	3000	2/24	125	44.7	30.1	28.7	--
Home Sweet Home	23B5	5200	2/25	188	78.3	57.2	73.8	64.2*
Sundown Pass	23B8	3900	2/25	185	73.2	41.0	58.9	45.4*

* Adjusted 1953-67 average

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Lands, Forests and Water Resources,
Water Resources Service, British Columbia

States:

Washington State Department of Water Resources
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
Weather Bureau
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Walla Walla
City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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